Claims

1. Focusing device (1) with a refractive index profile changing from the center of the focusing device (1) towards its perimeter (3), characterized in that the lateral refractive index distribution of the focusing device material is homogeneous and that the focusing device (1) comprises holes (2) for introducing a graded refractive index profile.

2. Focusing device according to claim 1, characterized in that the density of holes (2) increases towards the periphery of the focusing device (1).

3. Focusing device according to claim 1, characterized in that the holes (2) are distributed at random.

4. Focusing device according to claim 1, characterized in that the holes (2) are distributed according to a Monte Carlo algorithm.

5. Focusing device according to claim 1, characterized in that the focusing device (1) comprises at least two layers (16, 17, 18) deposited on a substrate (15).

6. Device comprising a focusing device according to claim 1.

7. Method of fabricating a planar focusing device (1), characterized in that a pattern of holes (2) arranged at random in a circular area is defined by nano-imprint or lithography, in particular electron-beam lithography, on a layer structure and that the holes (2) thus defined are etched, in particular by reactive ion etching.

8. Method according to claim 7, characterized in that the holes are distributed according to a generalized Monte Carlo algorithm.

9. Method according to claim 7, characterized in that the holes are etched down to a substrate (15), in particular a silicon wafer.

5   10. Method according to claim 7, characterized in that the holes (2) are patterned with a distance between holes (2) and diameters of the holes (2) in the sub-wavelength regime.